

1. A latch mechanism incorporated with an electronic display module comprising:

a. a latch housing formed on a panel of the electronic display module;

5 b. a latch lock plate mounted to the latch housing, the latch housing and the latch lock plate together bounding a cavity; and,

10 c. a latch, the latch being moveable within the cavity and being guided by the cavity along a latch pathway from a retracted position through an intermediate position to an engaged position, the latch pathway following a linear path between the retracted position and the intermediate position and a rotational path between the intermediate position and the engaged position.

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2. The construction of claim 1, wherein the latch has a body with at least one latch arm on a first end, an attachment fixture on a second end, and opposed posts in a central region.

5 3. The construction of claim 2, wherein the cavity includes a pair of opposed slots, the opposed slots being aligned and receiving the opposed posts of the latch.

10 4. The construction of claim 2, wherein the latch body has a pair of latch arms, and wherein the latch housing includes slots from which the pair of latch arms extend when the latch is in the intermediate position and when the latch is in the engaged position.

5. The construction of claim 2, further including a link pivotally connected to the attachment fixture.

15 6. The construction of claim 5, wherein the cavity is configured and dimensioned to constrain motion of the link during movement of the latch between the retracted position and the engaged position, but to allow the link to assume an overcenter relationship with the attachment fixture when the latch is in the engaged position.

20 7. The construction of claim 6, further comprising an actuator arm, the actuator arm having a first end and a second end, and wherein the link is pivotally attached to the first end of the actuator arm.

25 8. The construction of claim 7, wherein the second end of the actuator arm is driven by a gear and the gear is carried by a shaft.

9. The construction of claim 8, wherein the gear is driven by rotating the shaft.

30 10. The construction of claim 9, wherein the shaft driving the gear may be rotated in a first direction to place

the link in an overcenter relationship with the latch thereby placing the latch in the engaged position and wherein the shaft may be rotated in a second direction, opposite to the first direction, such that the link is released from the overcenter relationship with the latch and the latch is moved from the engaged position to the intermediate position and then to the retracted position.

11. The construction of claim 10, further comprising:

a. a second latch housing formed on the panel of the electronic display module;

b. a second latch lock plate mounted to the second latch housing, the second latch housing and the second latch lock plate together bounding a second cavity;

c. a second latch, the second latch having a body with at least one latch arm on a first end, an attachment fixture on a second end, and opposed posts in a central region and being moveable within the second cavity and being guided by the second cavity along a second latch pathway from a second retracted position through a second intermediate position to a second engaged position, the second latch pathway following a second linear path between the second retracted position and the second intermediate position and a second rotational path between the second intermediate position and the second engaged position;

d. a second link pivotally connected to the attachment fixture on the second latch; and,

e. a second actuator arm, the second actuator arm having a first end and a second end, the second link

being pivotally attached to the first end of the second actuator arm, and the second end of the second actuator arm being driven by the gear.

5 12. The construction of claim 11, wherein the first latch and the second latch are situated in mirror image-like arrangement, such that both latches are simultaneously in the same respective positions and both latches move simultaneously toward or away from the gear.

10 13. The construction of claim 11, wherein a gear support housing carries the gear and guides the first and second actuator arms.

14. The construction of claim 7, wherein the actuator arm is guided by a support housing.

15 15. The construction of claim 14, wherein the support housing is adjacent to the second end of the actuator arm.

16. The construction of claim 15, wherein the support housing further carries a gear and the actuator arm is driven by the gear.

17. A main housing for an electronic display module comprising:

- a. a panel;
- b. a peripheral wall bounding the panel;
- 5 c. a plurality of latch mechanisms located on the panel adjacent to the peripheral wall, each of the latch mechanisms including a latch housing and a latch moveable within the latch housing, the latch having at least one latch arm, the latch arm being moveable between an extended engaged position and a more compact retracted position; and,
- 10 d. at least one actuator system, the at least one actuator system being capable of simultaneously moving at least two of the latches of the plurality of latch mechanisms between the engaged position and
- 15 the retracted position for each latch being moved.

18. The main housing of claim 17, wherein the at least one actuator system simultaneously moves two latches and the two latches are arranged as mirror images.

5 19. The main housing of claim 17, wherein the panel has two pairs of latch mechanisms, the latch mechanisms of each pair being in a mirror image-like arrangement to each other, and two actuator systems, each actuator system of the two actuator systems being capable of simultaneously moving the latches of one of the pairs of latch mechanisms.

10 20. The main housing of claim 19, wherein the panel is substantially rectangular in shape and the peripheral wall is substantially rectangular in shape, the main housing having four corners and four sides.

15 21. The main housing of claim 20, wherein the latch mechanisms of a pair of latch mechanisms are located adjacent to each of two adjacent corners, and the actuator system for moving the latches of that pair is located adjacent to the side connecting the two adjacent corners.

20 22. The main housing of claim 21, wherein the latches of that pair when moved move substantially parallel to the side connecting the two adjacent corners.

25 23. The main housing of claim 22, wherein each actuator system includes a pair of actuator arms, each of the actuator arms being connected to a latch of one of the latch mechanisms.

24. The main housing of claim 23, wherein both the actuator arms of an actuator system are carried by a single support housing.

30 25. The main housing of claim 24, wherein the support housing includes a gear, the gear being interposed between the

actuator arms and simultaneously driving the actuator arms in opposite directions.

26. The main housing of claim 25, wherein the gear is mounted on a shaft.

5 27. The main housing of claim 26, wherein the gear is driven by the shaft.

28. The main housing of claim 27, wherein the main housing has a front side and a rear side and the shaft may be rotated from the front side or the rear side.

10 29. The main housing of claim 28, wherein the shaft may be rotated from both the front side and the rear side.

30. The main housing of claim 27, wherein the shaft has an end suitably shaped for rotation by a complementary suitably shaped tool.

15 31. The main housing of claim 17 in combination with a driver board secured to the panel.

32. The main housing of claim 17 in combination with an LED display panel secured to the panel.

20 33. The main housing of claim 17 in combination with a louver panel secured to the panel.

34. The main housing of claim 17, in combination with:
a. a louver panel secured to the panel; and,
b. an LED panel interposed between the louver panel and the panel.

25 35. The main housing of claim 17, in combination with:
a. a louver panel secured to the panel on the front side of the panel;

b. an LED panel interposed between the louver panel and the panel; and,

30 c. a driver board secured to the panel on the back side of the panel.

36. The main housing of claim 17 in combination with a mounting panel assembly, the mounting panel assembly being adapted to accept the main housing, such that the latches of the main housing engage the mounting panel assembly in the engaged position and allow the main housing to disengage from the mounting panel assembly in the retracted position.

37. The combination of claim 36, wherein the mounting panel assembly has a tab to be engaged by a latch arm in the engaged position.

38. The combination of claim 37, wherein the tab has an alignment hole and the main housing has a locator post, the locator post facilitating alignment of the housing with the mounting panel assembly.

39. The combination of claim 38, wherein each latch has a pair of latch arms, the pair of latch arms of a latch engaging the tab on opposite sides of the locator post when the locator post is inserted in the alignment hole and the latch is in the engaged position.

40. The combination of claim 39, wherein the latch arms allow the locator post to be removed from the alignment hole in the retracted position, such that the main housing may be separated from or aligned to the mounting panel assembly when the latch arms are retracted.

41. A process for attaching a housing to a mounting panel assembly in an electronic sign comprising the steps of:

- 5 a. providing a housing and a mounting panel assembly, the housing being complementary to the mounting panel assembly and having a four-point latching system which includes latches actuatable in pairs by an actuator gear for each pair, each of the latches having inboard and outboard latch arms, the housing further having locator posts, and the mounting panel assembly having tabs with alignment holes for accepting the locator posts;
- 10 b. rotating the actuator gears to ensure full retraction of the latches towards the actuator gears;
- 15 c. positioning and aligning the locator posts with the alignment holes of the mounting panel assembly and bringing the housing into contact with the mounting panel assembly;
- 20 d. rotating the actuator gears to position the outboard latch arms and the inboard latch arms over the tabs of the mounting panel assembly; and,
- 25 e. continuing rotation of the actuator gears to rotationally position the outboard latch arms and the inboard latch arms against the tabs of the mounting panel assembly.